General

Guideline Title

Best evidence statement (BESt). Use of a clinical pathway in decreasing albuterol frequency in all patients up to 18 years of age admitted to the hospital with a diagnosis of asthma or reactive airway disease.

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BESt). Use of a clinical pathway in decreasing albuterol frequency in all patients up to 18 years of age admitted to the hospital with a diagnosis of asthma or reactive airway disease. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2011 Aug 22. 5 p. [9 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The strength of the recommendation (strongly recommended, recommended, or no recommendation) and the quality of evidence (1a-5) are defined at the end of the "Major Recommendations" field.

1. It is recommended that a clinical pathway be used for pediatric patients up to age 18 years of age admitted with the diagnosis of asthma or reactive airway disease who are receiving intermittent nebulized albuterol treatments for decreasing the:
    - Length of hospital stay (Banasiak & Medows-Oliver, 2004 [1b]; Papo, Frank, & Thompson, 1993 [2a]; McDowell et al., 1998 [3a]; Johnson et al., 2000 [3b]; Kelly et al., 2000 [4b]; Lierl et al., 1999 [4b]; Wazeka et al., 2001 [4b])
    - Amount of albuterol given (McDowell et al., 1998 [3a]; Johnson et al., 2000 [3b]; Wazeka et al., 2001 [4b])
2. There is insufficient evidence and lack of consensus to support the use of a clinical pathway for pediatric patients up to 18 years of age admitted with the diagnosis of asthma or reactive airway disease who are receiving continuous nebulized albuterol treatments for weaning from continuous to intermittent therapy.

Definitions:

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies

Quality Level	Definition
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5	Other: General review, expert opinion, case report, consensus report, or guideline

†a = good quality study; b = lesser quality study

Table of Recommendation Strength

Strength	Definition
"Strongly recommended"	There is consensus that benefits clearly outweigh risks and burdens (or vice-versa for negative recommendations).
"Recommended"	There is consensus that benefits are closely balanced with risks and burdens.
No recommendation made	There is a lack of consensus to direct development of a recommendation.
Dimensions: In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.	
1. Grade of the body of evidence 2. Safety/harm 3. Health benefit to the patients (direct benefit) 4. Burden to patient of adherence to recommendation (cost, hassle, discomfort, pain, motivation, ability to adhere, time) 5. Cost-effectiveness to healthcare system (balance of cost/savings of resources, staff time, and supplies based on published studies or onsite analysis) 6. Directness (the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome]) 7. Impact on morbidity/mortality or quality of life	

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

- Asthma
- Reactive airway disease

Guideline Category

Management

Clinical Specialty

Emergency Medicine

Family Practice

Internal Medicine

Pediatrics

Pulmonary Medicine

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Respiratory Care Practitioners

Guideline Objective(s)

To evaluate, among pediatric patients up to age 18 years of age admitted to the hospital with a diagnosis of asthma or reactive airway disease who are receiving either continuous or intermittent nebulized albuterol, if the use of a clinical pathway to wean the albuterol treatment frequency compared to obtaining a physician order for every frequency adjustment affects length of hospital stay or amount of albuterol given

Target Population

Pediatric patients up to age 18 years admitted with asthma or reactive airway disease (RAD) receiving either continuous or intermittent nebulized albuterol

Exclusion Criteria

a. Patients who require intubation, non-invasive ventilation support, or are in impending respiratory arrest
b. Patients with bronchiolitis or conditions characterized by non-bronchodilator-responsive wheezing.

Interventions and Practices Considered

Use of a clinical pathway to wean the albuterol treatment frequency compared to obtaining a physician order for every frequency adjustment

Major Outcomes Considered

- Length of hospital stay
- Amount of albuterol given

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Search Strategy

Databases searched: OVID MEDLINE, EBSCO CINAHL, Google Scholar, National Guideline Clearinghouse (www.guideline.gov) and National Heart Lung and Blood Institute (www.nhlbi.nih.gov/guidelines/asthma).

Search terms: asthma/clinical guideline, asthma/weaning protocol, asthma/clinical pathway, continuous albuterol/weaning protocol, albuterol/clinical pathway, albuterol/clinical guideline

Filters: English language and pediatrics

Date range: All dates up to and including May 31, 2011.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5	Other: General review, expert opinion, case report, consensus report, or guideline

†a = good quality study; b = lesser quality study

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Table of Recommendation Strength

Strength	Definition
"Strongly recommended"	There is consensus that benefits clearly outweigh risks and burdens (or vice-versa for negative recommendations).
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Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

Reviewed against quality criteria by two independent reviewers

Evidence Supporting the Recommendations

References Supporting the Recommendations

Banasiak NC, Meadows-Oliver M. Inpatient asthma clinical pathways for the pediatric patient: an integrative review of the literature. Pediatr Nurs. 2004 Nov-Dec;30(6):447-50. [21 references] PubMed

Johnson KB, Blaisdell CJ, Walker A, Eggleston P. Effectiveness of a clinical pathway for inpatient asthma management. Pediatrics. 2000 Nov;106(5):1006-12. PubMed

Kelly CS, Andersen CL, Pestian JP, Wenger AD, Finch AB, Strope GL, Luckstead EF. Improved outcomes for hospitalized asthmatic children using a clinical pathway. Ann Allergy Asthma Immunol. 2000 May;84(5):509-16. PubMed

Lierl MB, Pettinichi S, Sebastian KD, Kotagal U. Trial of a therapist-directed protocol for weaning bronchodilator therapy in children with status asthmaticus. Respir Care. 1999;44(5):497-505.

McDowell KM, Chatburn RL, Myers TR, O'Riordan MA, Kercsmar CM. A cost-saving algorithm for children hospitalized for status asthmaticus. Arch Pediatr Adolesc Med. 1998 Oct;152(10):977-84. PubMed

Papo MC, Frank J, Thompson AE. A prospective, randomized study of continuous versus intermittent nebulized albuterol for severe status asthmaticus in children. Crit Care Med. 1993 Oct;21(10):1479-86. PubMed

Wazeka A, Valacer DJ, Cooper M, Caplan DW, DiMaio M. Impact of a pediatric asthma clinical pathway on hospital cost and length of stay. Pediatr Pulmonol. 2001 Sep;32(3):211-6. PubMed

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Health benefits associated with using a clinical pathway are decreased overall exposure to albuterol, decreased length of stay in the intensive care unit, and decreased length of overall hospital stay. By decreasing the length of hospital stay and medication delivered, overall hospital costs will be decreased.

Potential Harms

- Minimal side effects and risks associated with using a clinical pathway for weaning continuous and intermittent nebulized albuterol include readmission to the hospital and respiratory therapists not following the clinical pathway. While not addressed in the evidence, a potential risk is the frequency of treatments being decreased before the patient meets pathway guidelines.
- Exercise caution when treating patients who have congenital or acquired cardiovascular disease, cystic fibrosis, chronic lung disease, bronchopulmonary dysplasia, acute chest syndrome due to sickle cell anemia, or immunodeficiency syndromes as these conditions may not respond as expected to therapy.

Qualifying Statements

Qualifying Statements

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2011 Aug 22

Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Source(s) of Funding

Cincinnati Children's Hospital Medical Center

Guideline Committee

Not stated

Composition of Group That Authored the Guideline

Team Leader: Tanya Scholl, RRT-NPS, BHS, RT III, Pediatric Intensive Care Unit

Support Personnel: Barbara Giambra, RN, MS, CPNP, Evidence Base Practice Mentor, Center for Professional Excellence-Research and Evidence-Based Practice

Ad Hoc: Tonie Perez, RRT-NPS, BHS, RT III, Neonatal Intensive Care Unit; Rhonda Schum, RRT, RT II, The Heart Institute; Brandy Seger, RRT-NPS, MS, Clinical Manager Pediatric Intensive Care Unit; Erika Stalets, MD, Instructor, The Division of Critical Care Medicine; Derek Wheeler, MD, Clinical Director, The Division of Critical Care Medicine

Financial Disclosures/Conflicts of Interest

Not stated

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Availability of Companion Documents

The following are available:

- Judging the strength of a recommendation. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Jan. 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .
- Grading a body of evidence to answer a clinical question. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .
- Table of evidence levels. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Feb 29. 1 p. Available from the Cincinnati Children's Hospital Medical Center Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on January 4, 2012.

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